

## Quiz 2 Answers

Find the instantaneous time sinusoidal functions corresponding to the following phasors. ( $z$  is position.  $Y_0^+$  and  $Y_0^-$  are **real and positive**)

$$\tilde{Y}_1(z) = Y_0^+ e^{-j\beta z}$$

$$y_1(z, t) = Y_0^+ \cos(\omega t - \beta z)$$

$$\tilde{Y}_2(z) = Y_0^- e^{j\beta z}$$

$$y_2(z, t) = Y_0^- \cos(\omega t + \beta z)$$

$$\tilde{Y}(z) = -2jY_0^+ \sin(\beta z)$$

$$y(z, t) = \text{Re}[-2jY_0^+ \sin(\beta z)e^{j\omega t}] = 2Y_0^+ \sin(\beta z) \sin(\omega t)$$

Find the phasor for the following function of position  $z$  and time  $t$ . ( $z$  is position.  $V_0^+$  is **real and positive**)

$$v(z, t) = 2V_0^+ \cos(\beta z) \cos(\omega t)$$

$$\tilde{V}(z) = 2V_0^+ \cos(\beta z)$$

### Grading guidelines:

- Attendance points 60. Each problem 10 points.
- Full points for alternative correct answers, e.g.  $\cos(x - \pi/2) = \sin x$
- Deduct 1 point for equating phasor to time function or vice versa.